



ICAR - Indian Agricultural Research Institute, New Delhi

The seat of Green Revolution & sustainable Food Security



Modernizing Agriculture, Livestock, & Fishery Sectors

VISION 2031

AN INTERNATIONAL CONFERENCE
ON DEVELOPMENT AND DEMOCRACY



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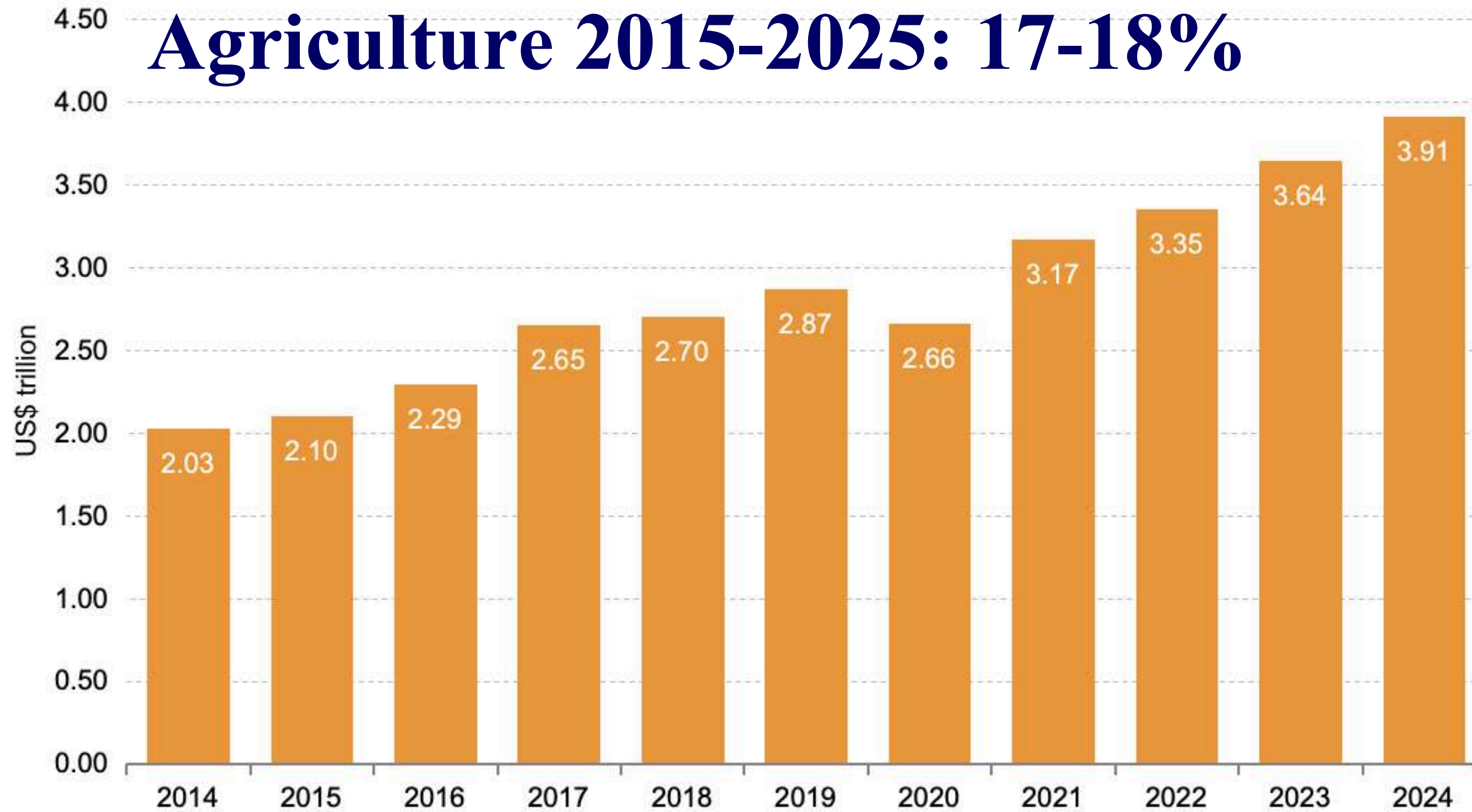
• Modernizing Agriculture, Livestock, & Fishery Sectors

- Agriculture contribution to Kerala GSDP
- Enhancing primary production
 - Production Gaps
 - SRR, VRR, Quality Seeds/planting materials
 - Precision Agriculture
- Processing and Secondary agriculture
 - Post-harvest loss minimization
 - Waste to wealth
 - Bioeconomy
- Subsistence to Commercial Farming
 - FPOs, Agri entrepreneurship & start up, high value jobs
- Export promotion
- Conclusion





Indian Economy (GDP) and Agriculture



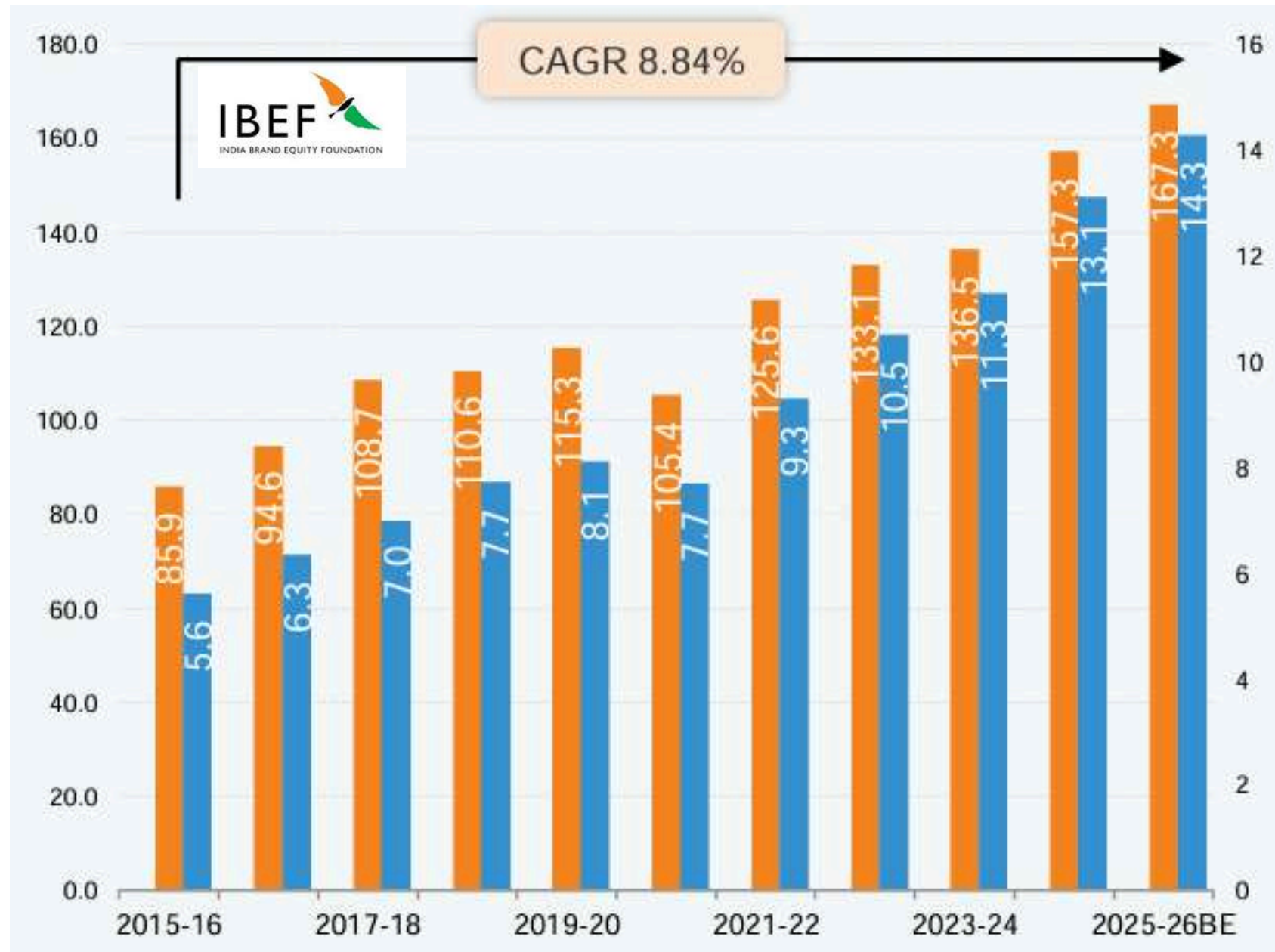
**2031: ~ 7.0 Trillion
USD**



Gross State Domestic Product (GSDP) of Kerala and Contribution of Agriculture

- **India GDP: USD 3.91 trillion (FY 2024-25)**
- **Kerala GSDP: USD 0.16 Trillion (FY 2025-26)**
(4.3% of India's GDP)

Kerala GSDP

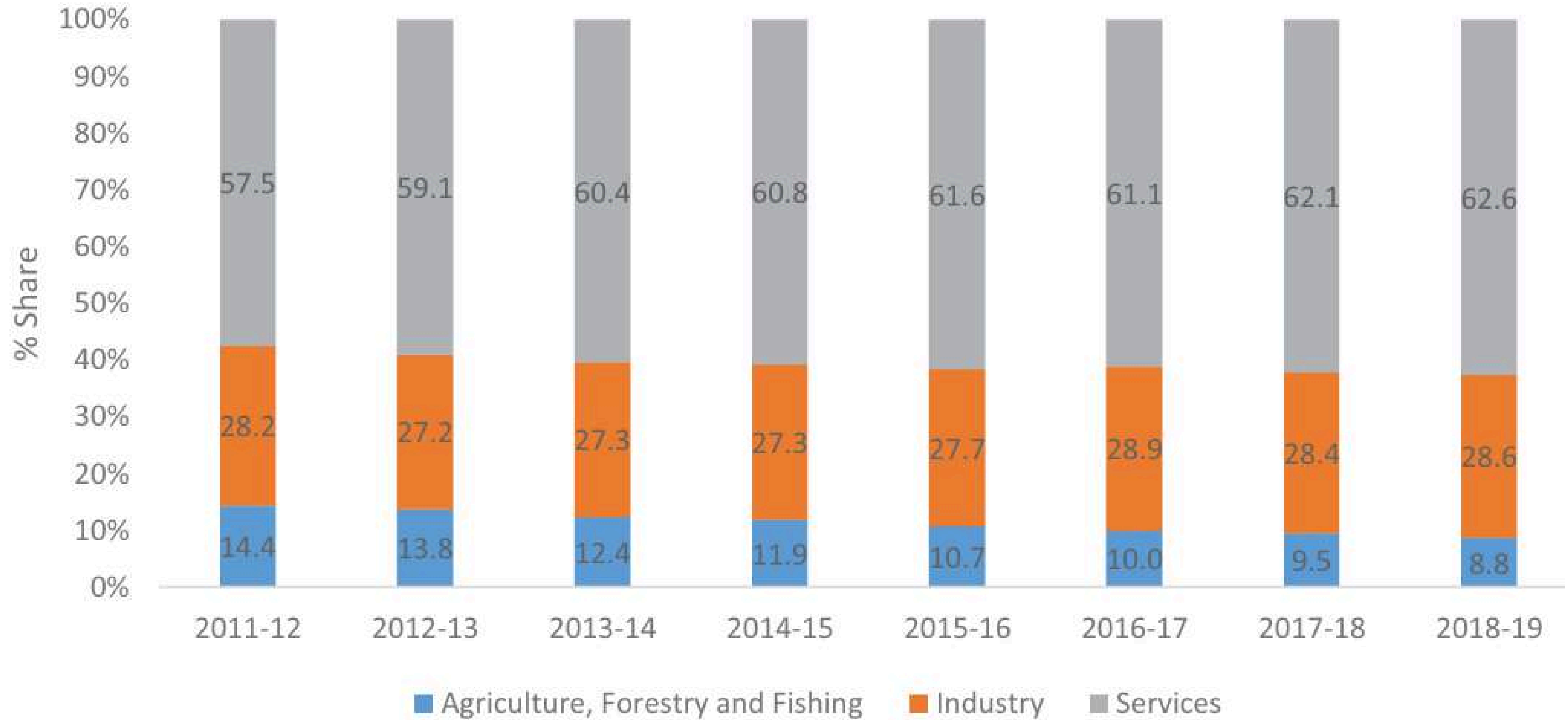


FY	Kerala GSDP (₹ lakh crore)	Agri & Allied Share (%)	Agri GSDP (₹ lakh crore)
2014-15	5.13	11.9	0.61
2015-16	5.62	10.7	0.60
2016-17	6.35	10.0	0.63
2017-18	7.02	9.6	0.67
2018-19	7.88	9.0	0.71
2019-20	8.13	8.6	0.70
2020-21	7.72	9.6	0.74
2021-22	9.32	9.0	0.84
2022-23	10.46	8.5	0.89
2023-24*	~12.0	~8.3	~1.00

- Contribution of Agriculture to Kerala GSDP is declining (%) as compared with its contribution to India's GDP which remained stable around 17-18% over the past one decade.
- Target and action plan for enhancing the contribution to Kerala GSDP is required



Sector-wise share in Gross Value Added (GVA) for Kerala



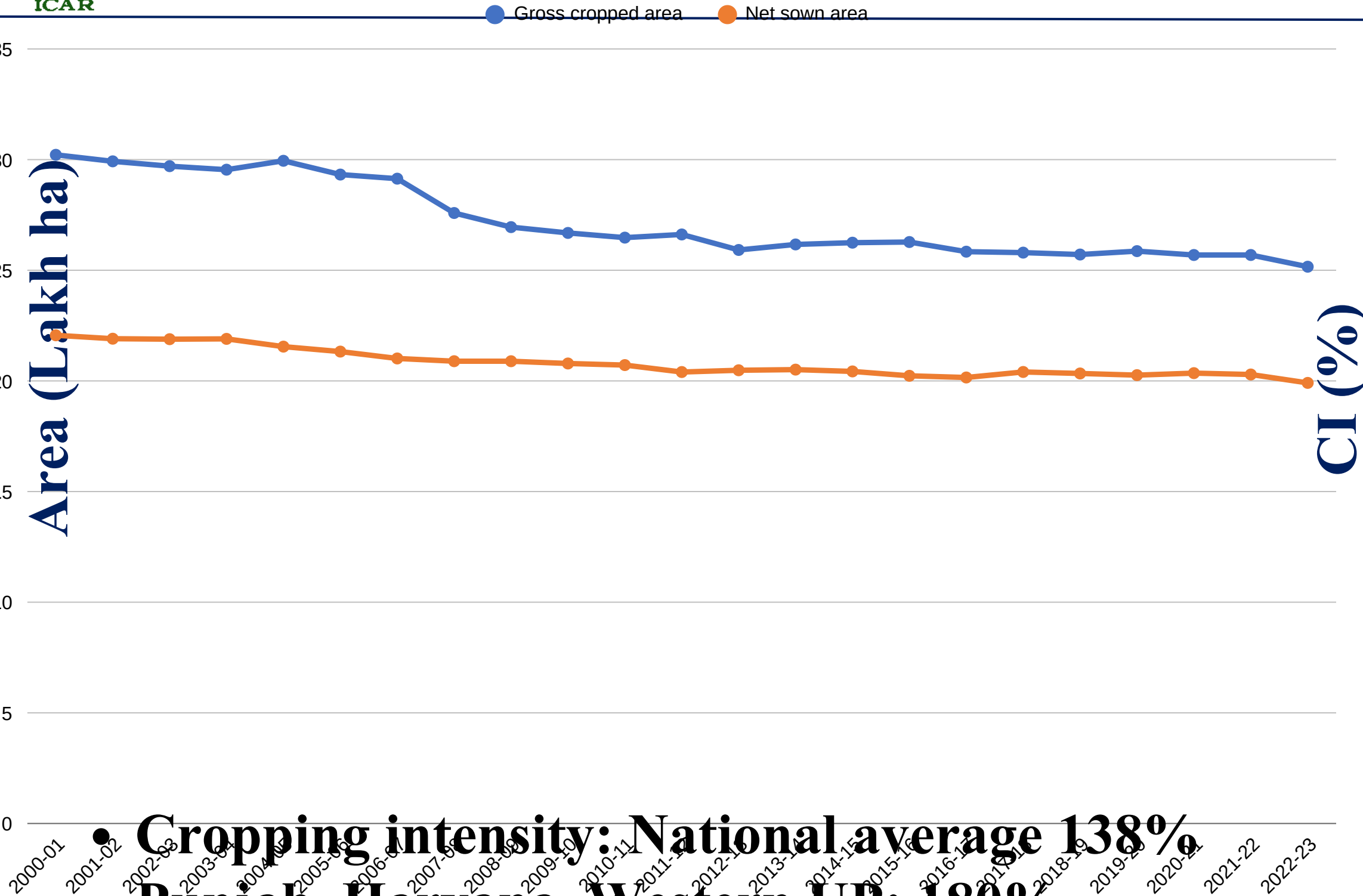
Operational Holdings in Kerala 2015-16

Class and size of holdings	No. of operational holdings (lakhs)	Average size of holdings (ha)	Area of operational holdings (Lakh ha)
Marginal (< 1 ha)	73.33	0.12	8.560
Small (1-2 ha)	1.81	1.34	2.423
Semi Medium (2-4 ha)	0.55	2.55	1.416
Medium (4-10 ha)	0.12	5.29	0.600
Large (> 10 ha)	0.02	18.77	0.950
All	75.83	0.18	13.949

Population: ~35.8 million (~35% Agriculture & allied sector)



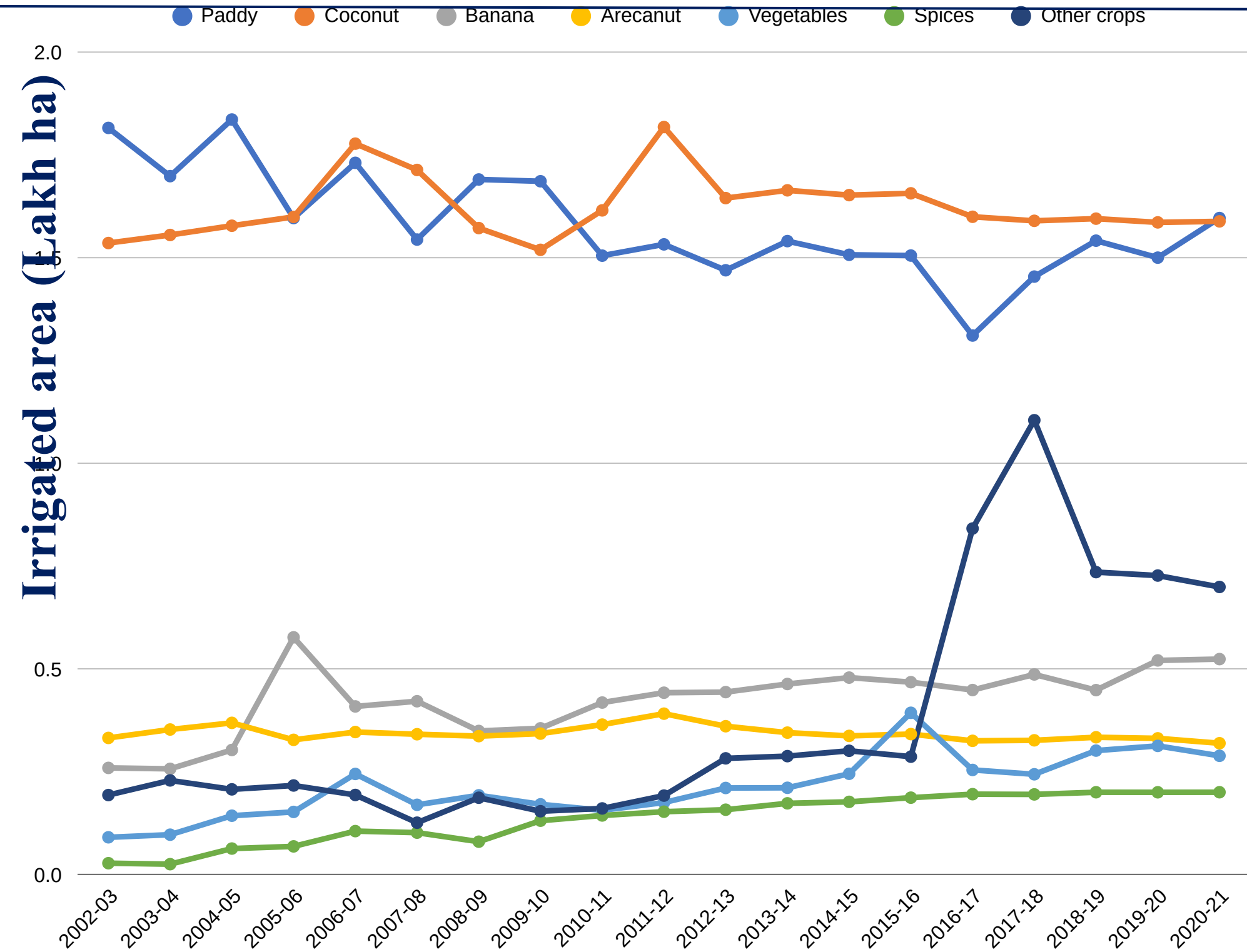
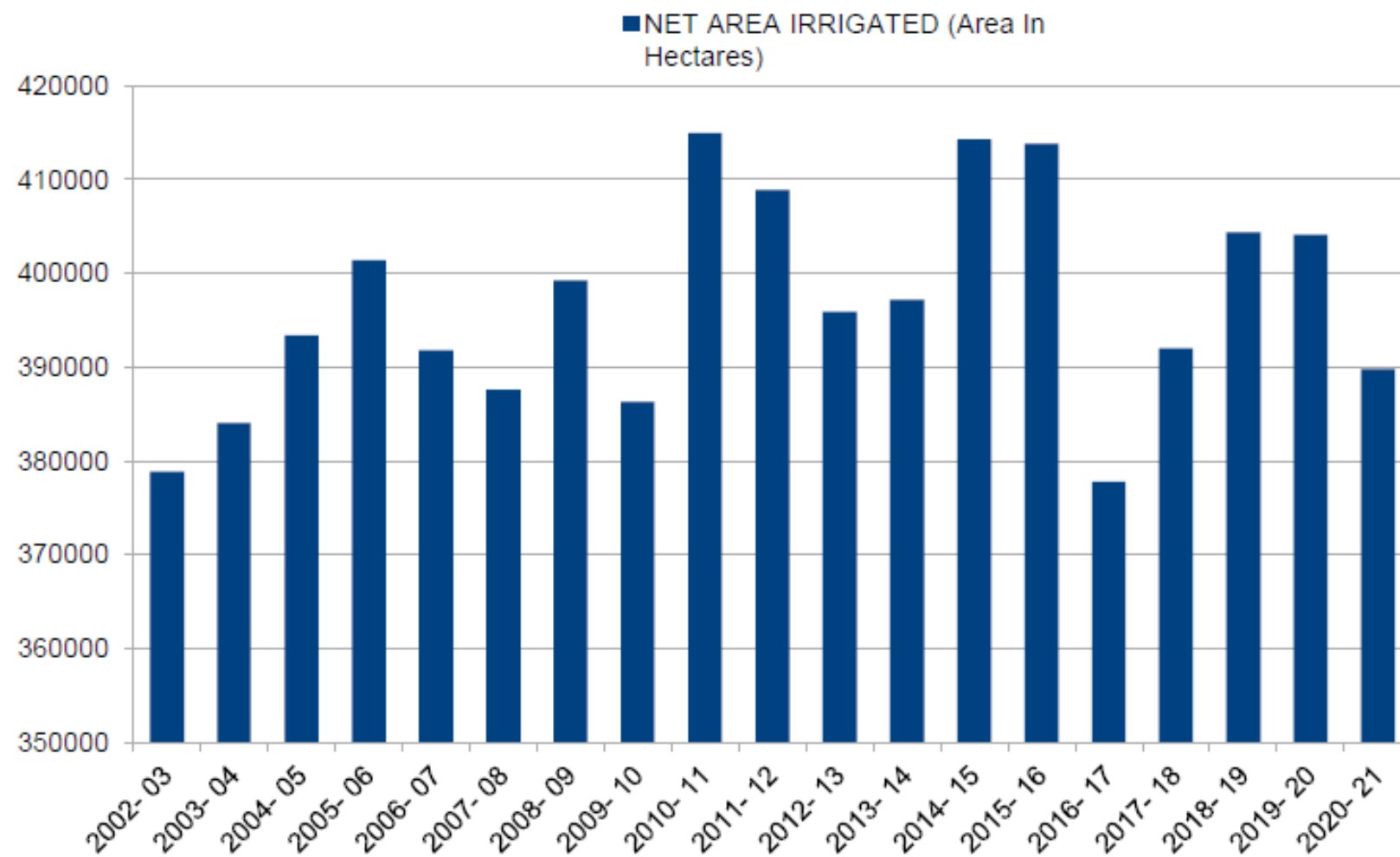
Intensity of Cropping in Kerala



Crop	Area (000 ha)	Production (000 t)
Paddy	205.04	633.74
Tapioca	64.25	3027.75
Coconut	768.81	4.79
Arecanut	103.16	103.16
Banana	57.70	544.19
Other Plantain	53.57	412.86
Mango	76.57	475.22
Pineapple	11.02	112.15
Cashew	37.92	20.91
Cocoa	14.61	18.76
Pepper	82.12	33.59
Ginger	2.70	12.10
Turmeric	2.22	7.42
Cardamom	39.14	20.57
Tea	35.87	66.85
Coffee	85.88	68.55
Rubber	590.65	492.50
Others	1.52	10.85

- **Cropping intensity: National average 138%**
- **Punjab, Haryana, Western UP: 180%**
- **Many perennial crops – Limits CI – intercropping**

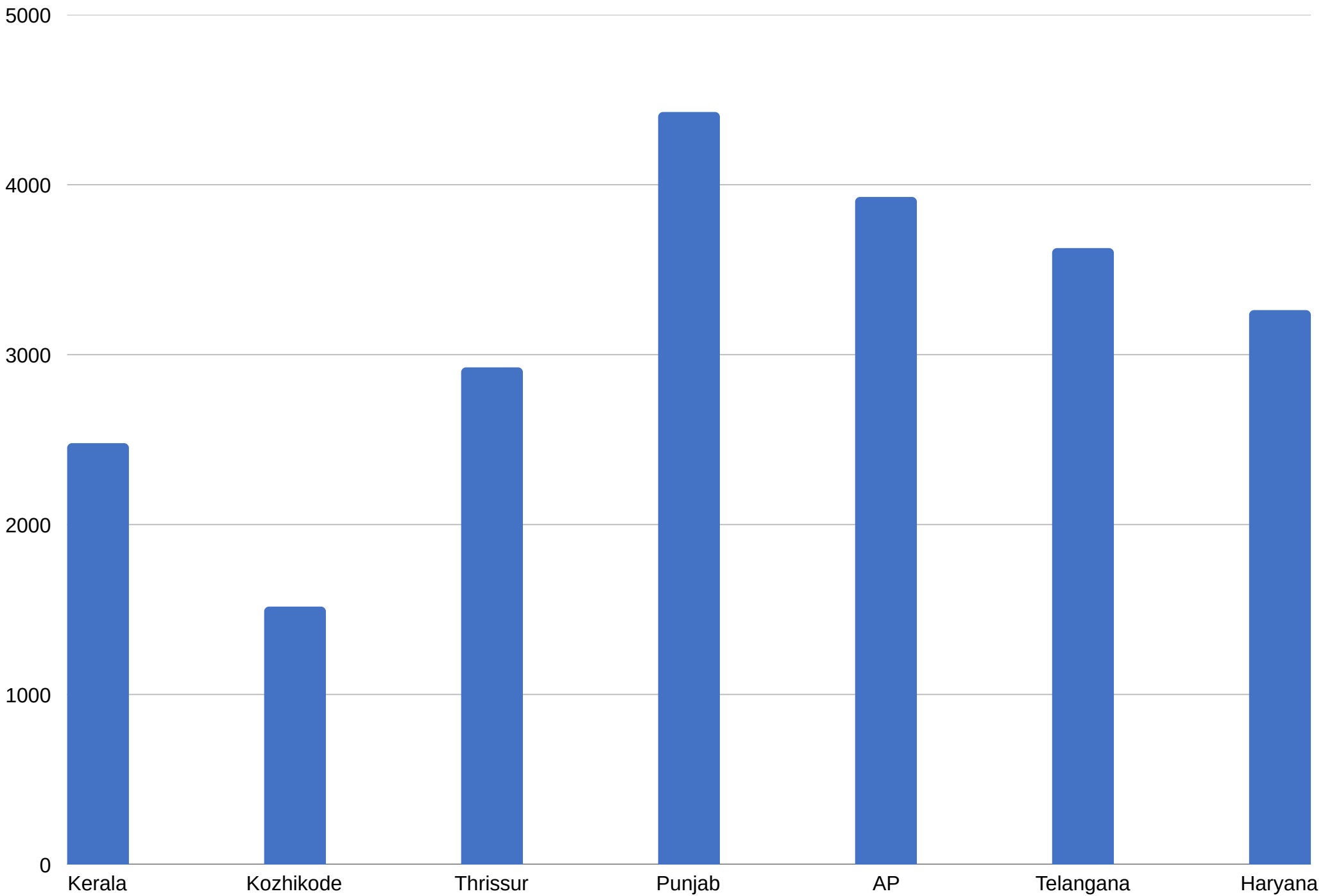
Irrigated area in Kerala



- 20% irrigated area
- Rainfed & High monsoon dependency
- Micro-irrigation potential need to be tapped



Addressing the yield gap & enhancing productivity in crops: Rice



- Crop management – Nutrients & Pests and diseases
- Farm mechanization
- Increasing SRR & VRR
- Climate resilient varieties



Addressing the yield gap & enhancing productivity in crops: Coconut

[CDB – Statistics 2023-24](#)

States	Area ('000 ha)	Production (Million nuts)	Productivity (Nuts/ha)	Rank
Kerala	765.84	5,522.71	7,211	9
Karnataka	564.62	6,151.00	10,894	4
Tamil Nadu	492.61	6,091.98	12,367	3
AP	107.37	1,707.08	15,899	1
Odisha	54.95	399.43	7,269	8
West Bengal	32.93	421.18	12,790	2
Maharashtra	31.32	262.6	8,384	7
Gujarat	26.56	246.08	9,265	5
Assam	20.19	178.27	8,830	6
Others	68.82	393.30	5,117	
Total	2,165.20	21,373.62	9,871	

- Homestead Farming , Aging trees, Root Wilt Disease, red palm weevil, Environmental Stress: “button shedding”
- Lack of Scientific Management
- Labor Constraints



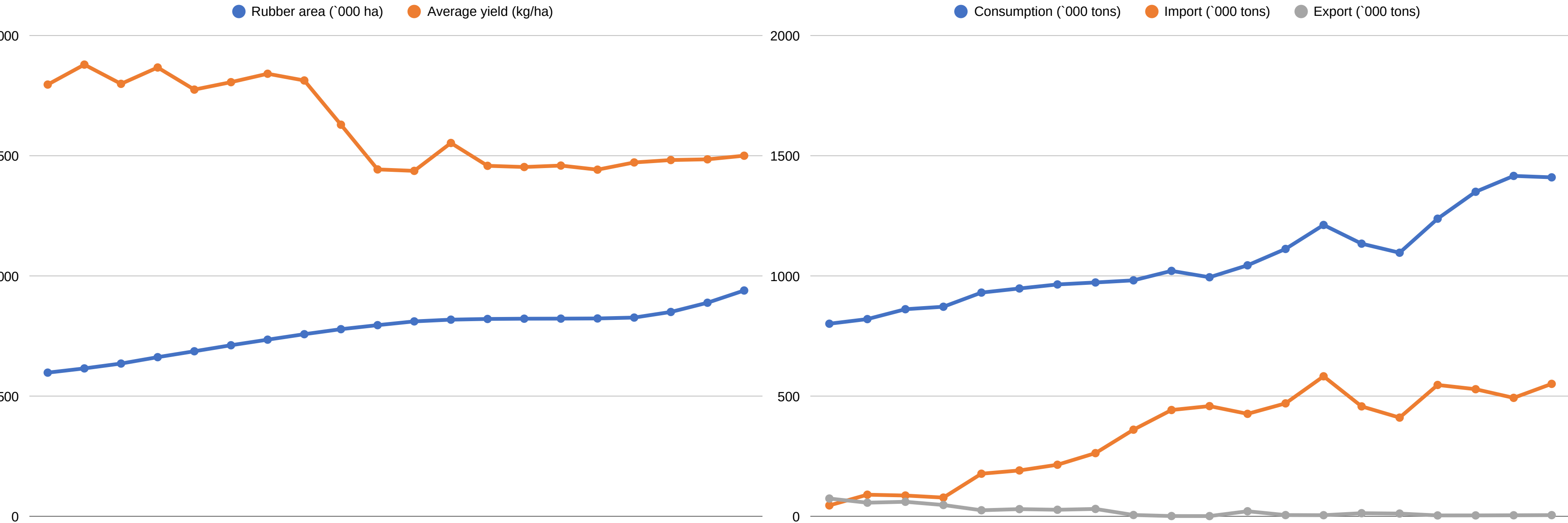
Banana production in Kerala

State	Area ('000 ha)	Production ('000 tonnes)	Productivity (ton/ha)
Gujarat	60.1	4,010.70	65.91
Maharashtra	90.9	6,534.30	48.2–65.7
AP	100.2	5,830.90	56.8
Tamil Nadu	101.8	4,719.90	41.9
Karnataka	126.5	3,121.90	23.8
Kerala	109.3	1,119.10	14.1
All India Avg	~1,000	37,800	35.78

- **Low-Yield Varieties:** Kerala primarily grows the **Nendran** banana, which has a lower inherent yield (approx. **30–35 t/ha**) compared to the **Grand Naine (G-9)** variety (~**60–70 t/ha**) favored in Gujarat and Maharashtra.
- **Suckers vs. Tissue Culture Saplings:** 95% area still rely on traditional suckers; Less than **5%** area uses high-yielding tissue culture varieties.
- **Small land holding, traditional cultivation methods**
- **Pest and Disease Pressure:** - high incidences of **Sigatoka leaf spot**, **Panama wilt**, and **pseudostem weevil**



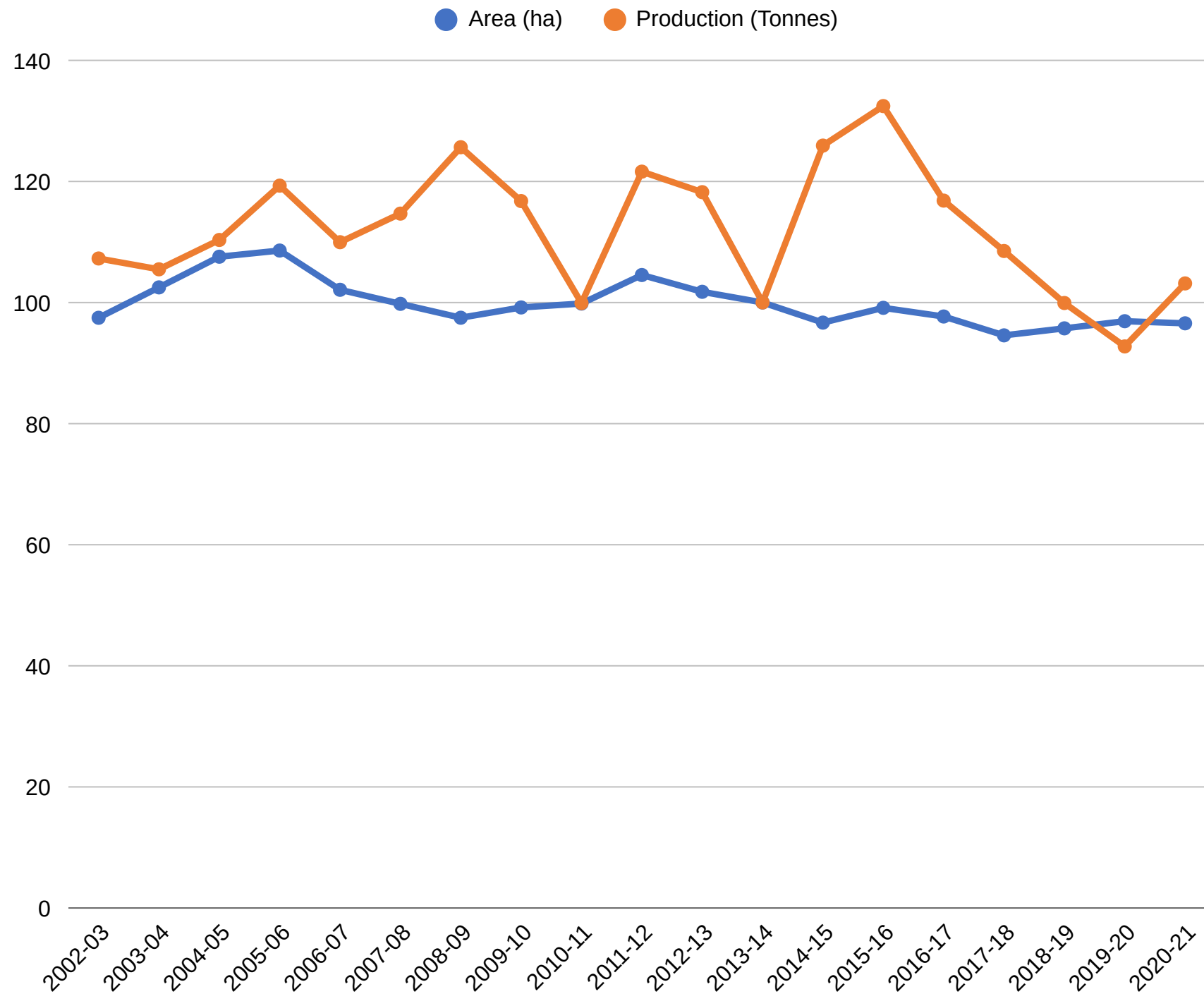
Rubber



- Replanting old plantations with high-yield clones
- Soil testing and balanced fertilization (NPK, Mg, B)
- Disease-resistant varieties
- Modern tapping methods
- Micro-irrigation to mitigate rainfall variability

Productivity of important crops

Arecanut



Crop	Area (ha)	Production (Tonnes)	Productivity (kg/ha)
Pepper	208607 -	67358 -	323 - 409
Cardamom	41412 -	8680 -	210 - 520
Cashew	39143 -	20570 -	746 - 551
Tea	37068 -	35348 -	1493 - 1864
Coffee	35871 -	66850 -	762 - 798
Tapioca	83113 -	63322 -	
Medicinal plants	85880 -	68545 -	
	104179 -	2413217 -	23164 - 47127
	64246 -	3027750 -	
	2378 -		
	1396		



Productivity enhancement: Crop-wise Planning

- **High-yielding, pest-resistant, and climate-resilient seed varieties will be promoted, along with a higher seed replacement rate.**
- **Quality Planting Material**
- **Tissue culture for clonal propagation of quality planting material**
- **Seed Villages**
- **Government support for plantation – replacement of old trees**
- **Mission mode project – Coconut, Rubber, Pepper, Banana**



Fertilizer Consumption (Tons)

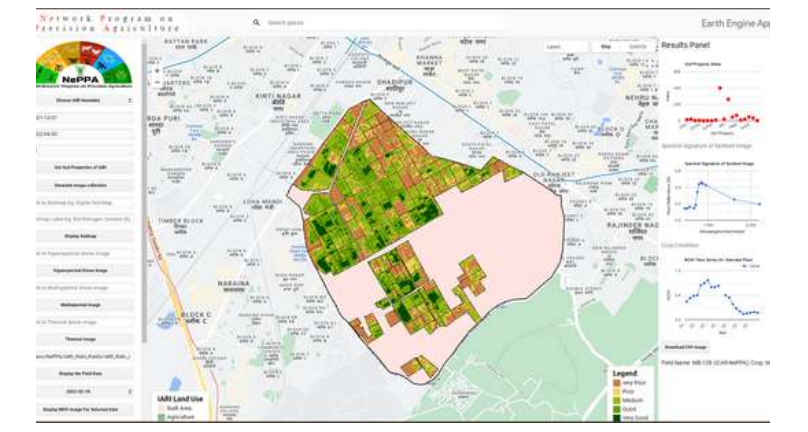
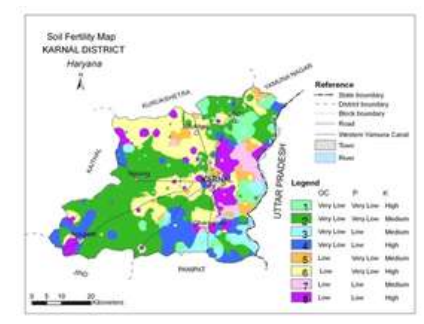
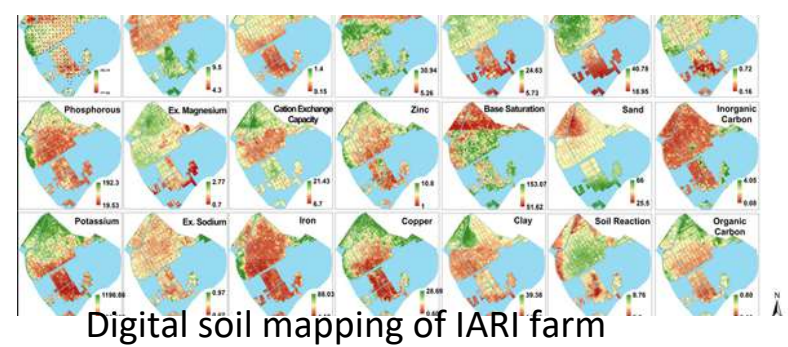
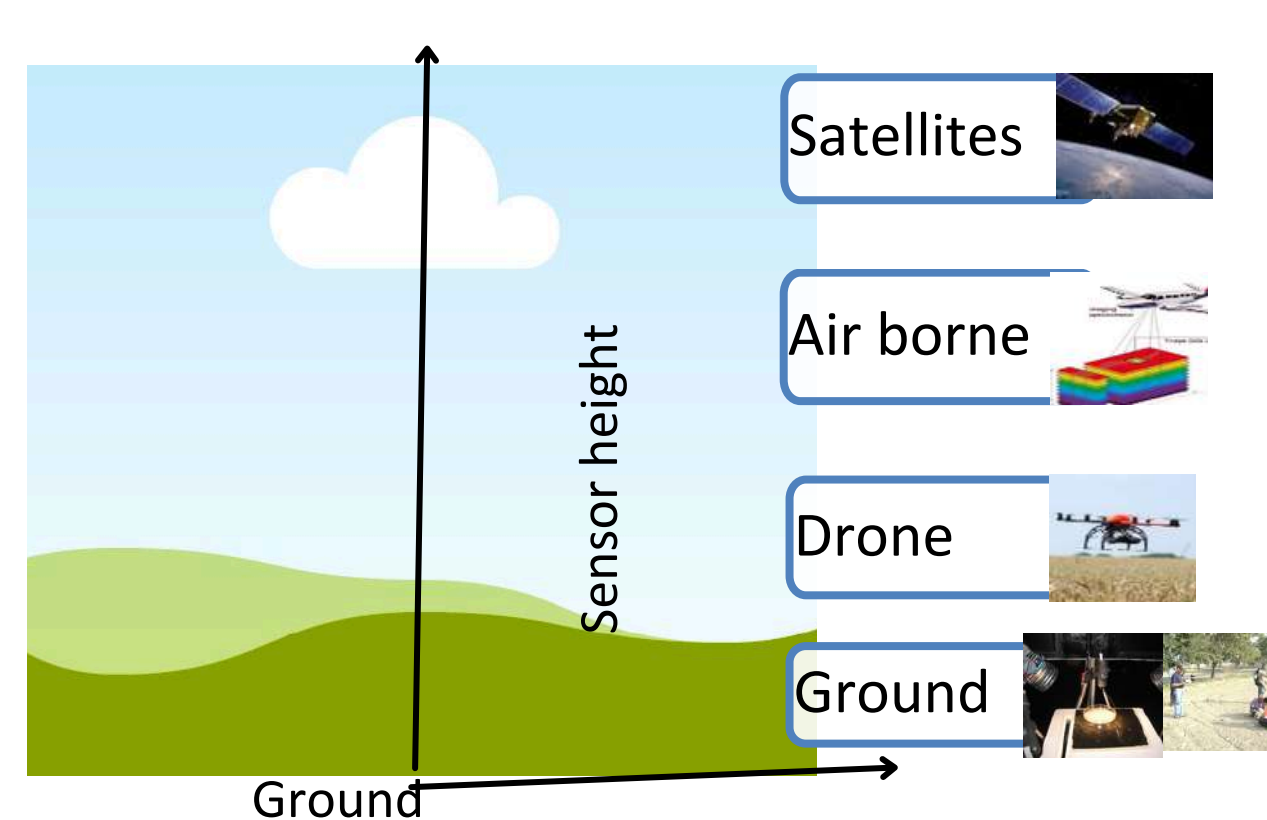
- **Fertigation & liquid fertilizers**
- **Microbial Fertilizers**
- **Biostimulants**
- **Promotion of Agripreneurship**

Pesticide consumption (Tons)

- **Biopesticides**
- **Minimization of Off-label Use of chemical pesticide**



Precision Agriculture- Drone and satellite technology



Fertility map unit	Plant available nutrient status in soils (kg ha ⁻¹)			Recommended dose of fertilizer nutrients (kg ha ⁻¹)								
	OC (%)	Olsen-P	Amm.Ac-K	Rice (6.5 t ha ⁻¹)			Wheat (6.0 t ha ⁻¹)			Maize (6.5 t ha ⁻¹)		
				N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
1	0.25	6	265	164	41	35	171	82	29	184	85	78
2	0.25	6	221	168	37	35	171	82	29	183	90	84
3	0.25	8	221	160	36	35	171	80	29	172	86	84
4	0.25	8	265	164	39	35	171	80	29	172	85	78
5	0.40	6	221	153	41	30	160	82	29	160	90	62
6	0.40	6	265	153	41	30	164	91	28	162	87	53
7	0.40	8	221	153	34	30	160	80	29	160	88	60
8	0.40	8	265	153	39	30	164	80	28	162	86	55

High resolution satellite based near real time crop condition monitoring system
Site specific nutrient recommendation

Technologies for capturing variability from lab to field scale

Drone Sensing as CAT Scanner for crop monitoring



Protected Cultivation-Hydroponics, Aeroponics & Vertical Farming





Processing & Value Addition

- Cold chains
- Coconut, spice & rice processing clusters
- Fruit & vegetable cold chains
- Common Facility Centres (CFCs)
- Reduction of post-harvest losses & price volatility

Requirements of Farmer to Transition into an Entrepreneur



Policy Support by Government of India

BIRAC-BIG Grant

Targeted at individual innovators, startups, and early-stage enterprises, the BIG scheme provides significant financial support—up to INR 50 lakhs—for transforming novel ideas into proof-of-concept or prototype development.

07

The Prime Minister Formalization of Micro Food Processing Enterprises (PMFME) Scheme

The scheme provides credit-linked subsidies for the upgradation of existing micro food processing units. The subsidy covers 35% of the eligible project cost, subject to a maximum of ₹10 lakh per unit.

08

RKVY-RAFTAAR

Financial support of INR 5 to 25 lakhs is provided to agripreneurs, startups, and incubators working on innovative agricultural projects with the potential to improve productivity, sustainability, and profitability in farming and allied sectors.

09

AND

NIDHI-PRAYAS

The grant-in-aid of INR 10 Lakhs is designed to encourage a culture of innovation and entrepreneurship by offering funding, mentorship, and access to state-of-the-art facilities.

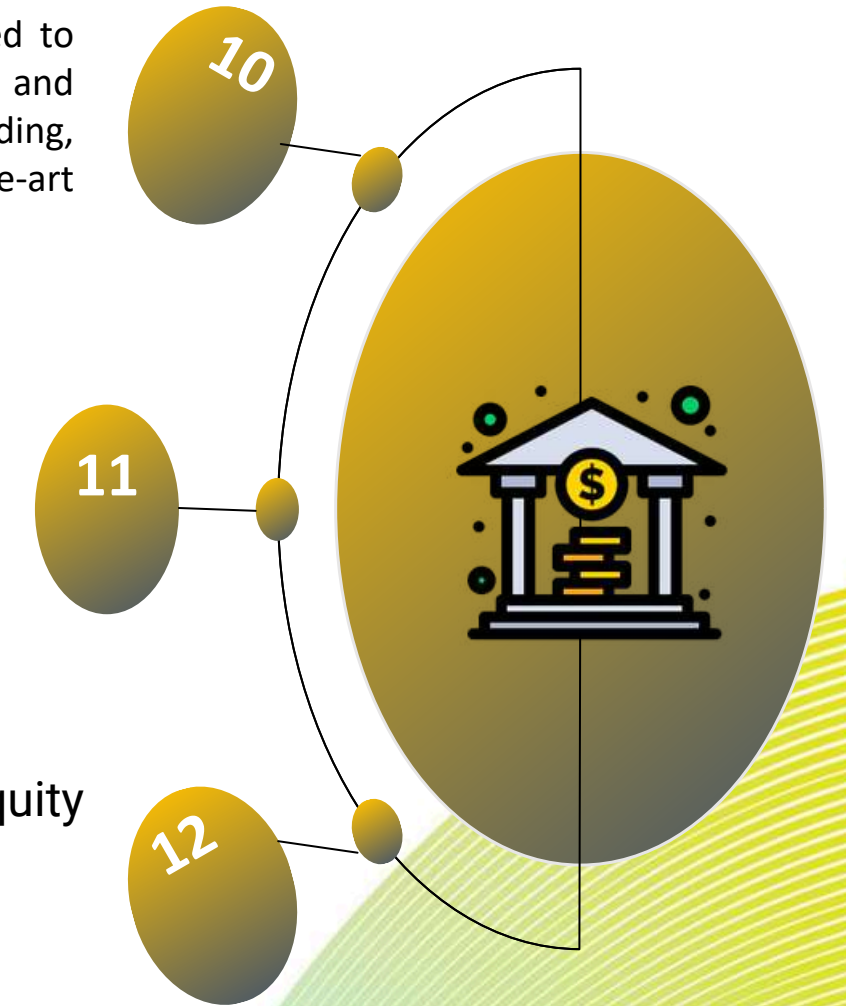
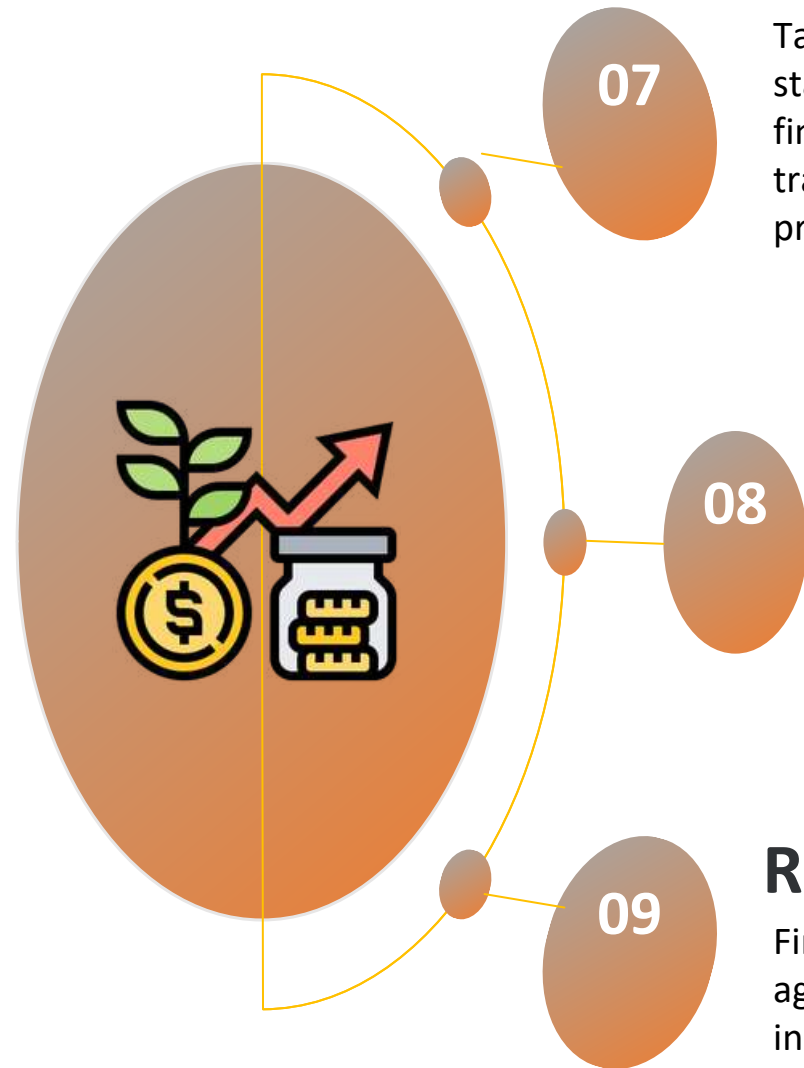
Credit facilities and subsidies

Venture capital and private equity

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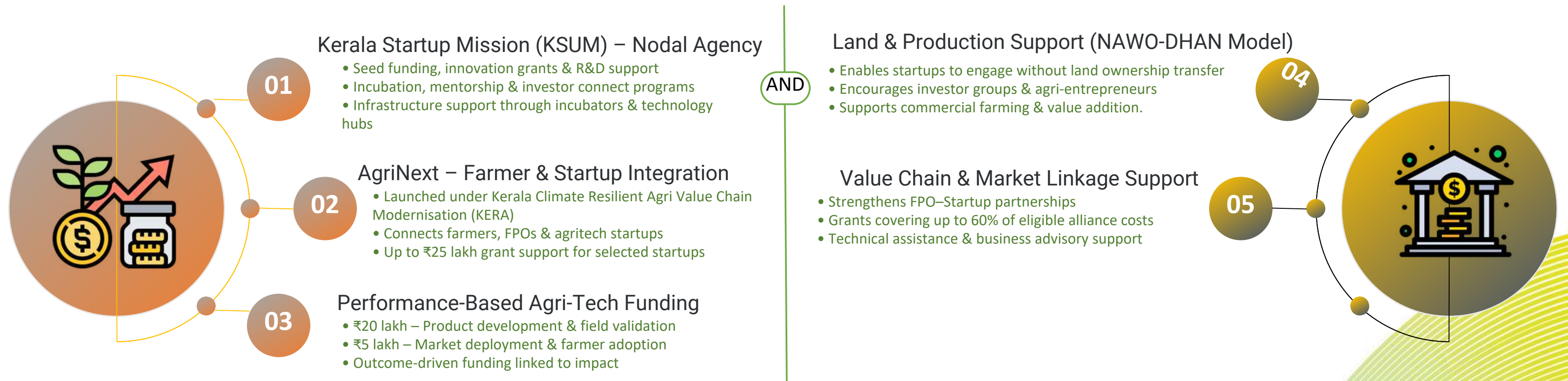
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Policy Support by Kerala Government

- In Kerala, several government policies and schemes support farmers transitioning into agripreneurs.
- These policies aim to provide financial assistance, technical support, and market access.
- Some key policy supports available:





Agri-Startups & Entrepreneurship

- Clean & quality planting materials
- Soil health
- Vertical Farming
- Precision farming & digital platforms
- Bio-inputs & sustainable agri-products
- Post-harvest processing
- Waste to wealth
- Secondary Agriculture
- Medicinal Plants
- Value Chain

Export Preparedness Index (EPI) 2024 Ranking



EPI 2022 Score – 44.03

Coastal

Rank 19



EPI 2024 Score – 53.76

Large States

Rank 11 - Challenger

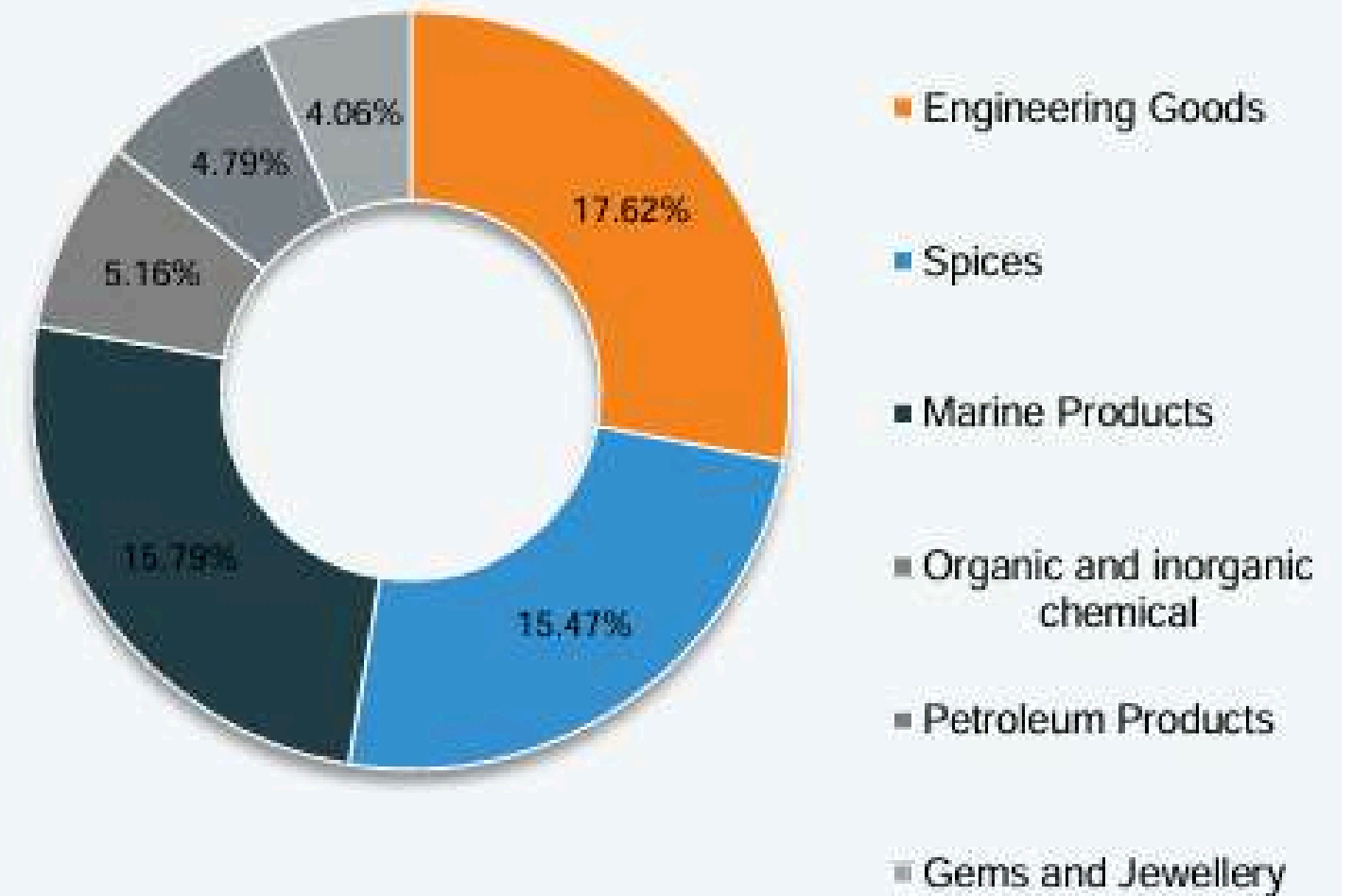
States	Scores	Category Rank	EPI 2024 Classification
Maharashtra	68.01	1	Leader
Tamil Nadu	64.41	2	Leader
Gujarat	64.02	3	Leader
Uttar Pradesh	62.09	4	Leader
Andhra Pradesh	60.65	5	Leader
Karnataka	59.30	6	Leader
Punjab	58.32	7	Leader
Telangana	57.14	8	Leader
Madhya Pradesh	57.00	9	Challenger
Haryana	55.01	10	Challenger
Kerala	53.76	11	Challenger
West Bengal	53.03	12	Challenger
Odisha	48.51	13	Aspirer
Chhattisgarh	48.50	14	Aspirer
Rajasthan	47.31	15	Aspirer
Bihar	46.31	16	Aspirer
Jharkhand	42.49	17	Aspirer

Kerala Export Trends

Export Trend (US\$ billion)



Composition of Key Items Exported from Kerala (FY25)

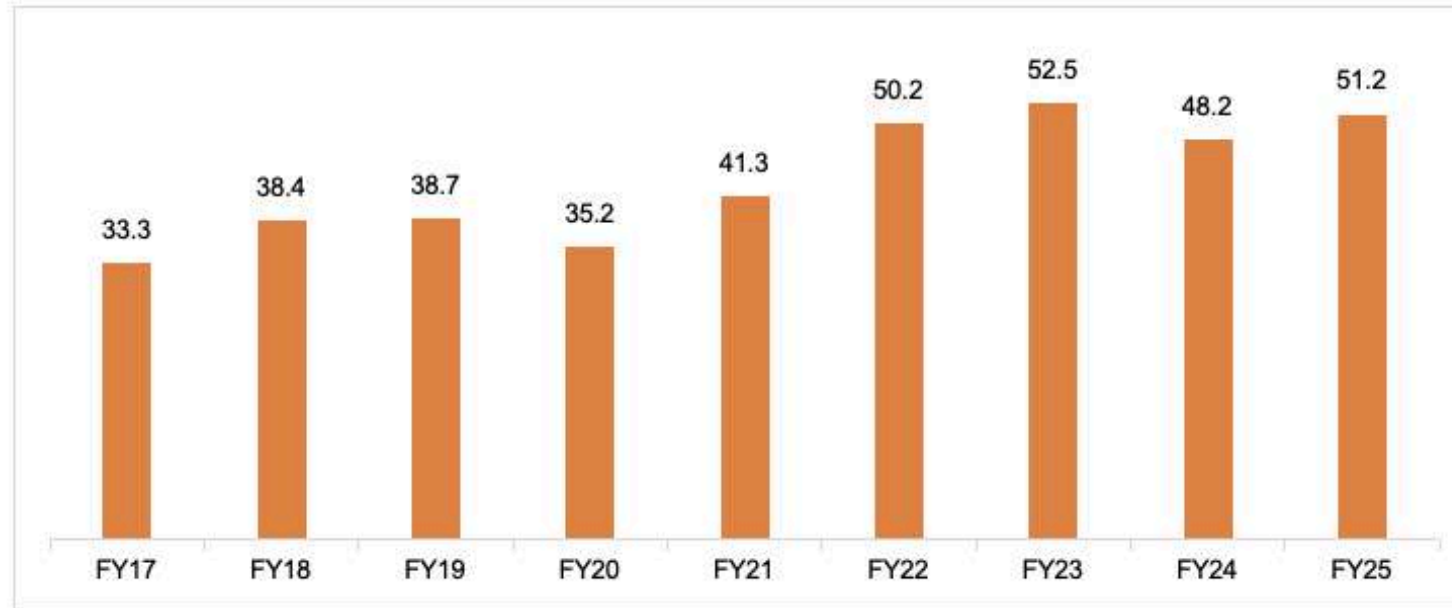


- Exports from the state stood at Rs. 42,343 crore (US\$ 4.77 billion) in FY25.
- Kerala exported two key items including Engineering Goods and Marine Products in FY25.



Agricultural Exports

India's agriculture exports trend (US\$ billion)



Source: The Ministry of Commerce & Industry

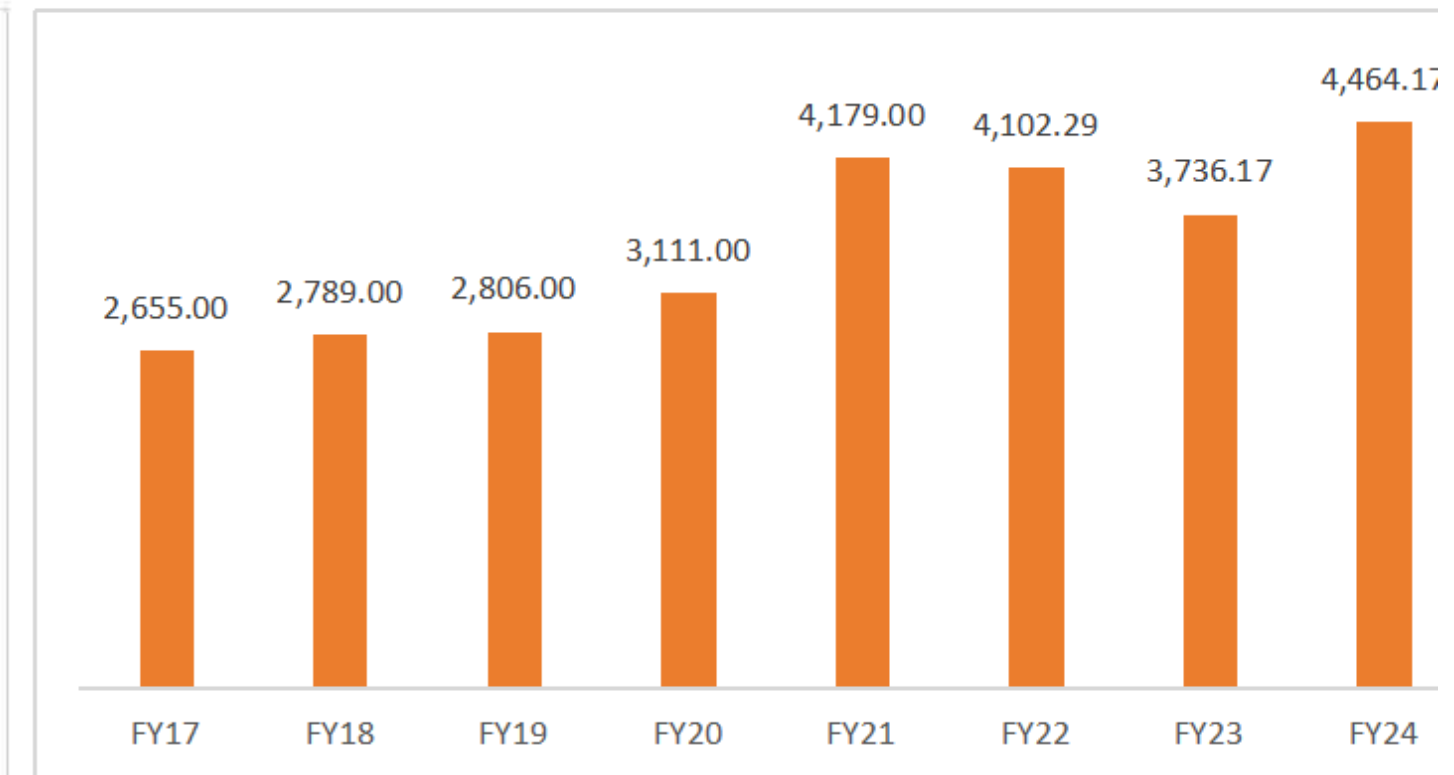
Chilli - top spice exported (US\$ 1,508.94 million), followed by cumin at US\$ 700.23 million and spice oils and oleoresins at US\$ 498.01 million. Others - mint products, turmeric, and curry powders/paste

India's coconut exports trend (US\$ million)



Source: Coconut Board of India, Money Control

India spice exports trend (million US\$)



Note: *- Until July 2025

Source: DGCI&S, RBI, NIRYAT



Vision 2031 & beyond

Targets:

- 30–40% increase in productivity of major crops
- Doubling farmer income (real terms)
- $\geq 50\%$ reduction in post-harvest losses
- Enhancing Agri-export
- Agriculture contribution to GSDP $\sim 12\%$

- Strengthening R&D Support
- Sector-wise, District-wise target identification
- Preparation of Detailed Action Plan
- Mission mode program
- Implementation and monitoring with all stakeholder

- **Vision 2047**
- **Short-term, mid-term and long-term plans and program**

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Thank you



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